

Jacketed projectile containing a two-part core.

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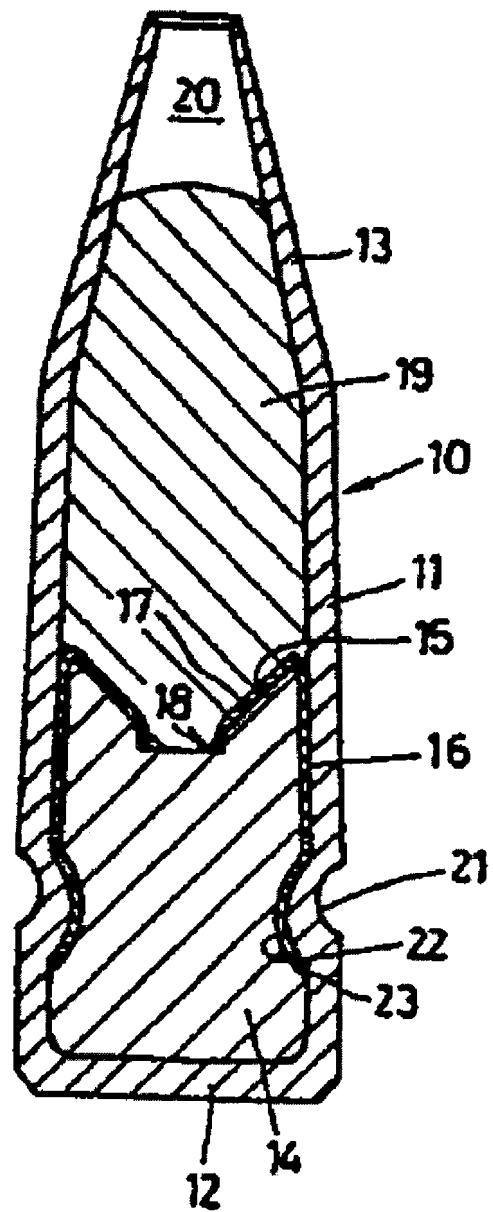
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Abstract of EP0225532

The projectile has in succession in an outer jacket (11) a front core (19) and a rear core (14). The rear core is surrounded partially by a cap-shaped inner jacket (16) which is hooked on the outer jacket (11) by means of a lateral indentation (21). When a soft target is hit, the front end of the outer jacket (11) widens radially and then swings back rearwards. The rear core (14) remains in place in the inner jacket (16) on the inside of the outer jacket (11). The front end of the rear core (14) is deformed according to the impact energy of the projectile. A more uniform projectile effect at different target ranges and a specific shape of the flattened residual body of the projectile are obtained.

FIG.1





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Double chamber projectile

The invention concerns a double chamber projectile for hand and handguns, in particular hunt cans, with two cores arranged one behind the other in an outer casing and the rear core at its front and laterally surrounding kappenförmigen interior coat.

Admit are hunt can projectiles, which contain two one behind the other arranged Bleikerne with different hardnesses. The front softer core is to divide itself in the game body and the rear harder core is to together-remain compact and a large depth effect with committee in the body to result in. These well-known projectiles have the disadvantage that they affect different ranges of fire differently. On shorter distances a too strong game cancellation develops and on larger distances a too small traumatic effect and delivery of energy. In addition it can happen that the rear Bleikern extracts itself from the projectile coat.

With a well-known double chamber projectile the outer casing contains a kappenförmigen interior coat, which covers the front even front surface of the rear core and with its side panel against the inner wall of the outer casing rests of the kind initially specified (magazine ?Handloader? January/February 1984, 32 to 35, 63, 64). With the impact of the projectile the front end of the outer casing pilzt itself up, whereby the front core can escape from the outer casing. These projectiles have however the disadvantage that they already divide themselves at small goal speeds (starting from 500 m/s) in the soft goal.

The invention is the basis the task to create a double chamber projectile of the kind initially specified which a good projectile effect on different ranges of fire has, a good traumatic effect by fast delivery of energy made possible and with that the projectile body in defined way aufpilzt, in order to achieve a good depth effect in the goal.

The solution of this task consists with a first variant of the invention of the fact that the outer casing and the interior coat are hooked with one another by at least a lateral mark.

With a such double chamber projectile the rear core as well as the interior coat by the lateral mark of the outer casing to this is held, so that it is guaranteed that the rear core remains in the outer casing at its place, while only its front range is deformed in defined way. The rear range of the outer casing is strengthened by the lateral mark at the same time. This range receives a increased resistive torque, so that it does not deform. The Aufpilzen of the outer casing takes place therefore before (at least one) the lateral mark.

With a second variant of the invention the rear core at its front exhibits a hollow, and a rear beginning of the front core fills out the hollow together with the soil of the interior coat.

▲ top With this double chamber projectile a particularly strong radial expansion of this core and the interior coat takes place via the upsetting of the front range of the rear core, whereby the rear core and the interior coat are pressed radially against the outer casing. Thus the desired actuated connection of rear core, interior coat and outer casing results from the deformation with the goal impact. While expanding the rear core and afterwards this core can shift relative to the outer casing not in firing direction, so that it cannot follow the front core. The hollow has preferably a trichterförmige shape, i.e. their front diameter is larger than the diameter at the hollow soil, so that a rotationally symmetric diagonal side panel of the hollow results. The hollow can be for example conically, kegelstumpfförmig or kalottenförmig.

Although a projectile causes an actuated connection of rear core, interior coat and outer casing with trichterförmiger hollow of the rear core during the penetration into the goal, a lateral mark can likewise be intended with such a projectile, which serves the deformation zone of the outer casing as additional security for holding the rear core and for the delimitation. The characteristics of the two variants of the invention described above can be united with one another thus.

With the double chamber projectile according to invention the front end of the rear core widens itself with the impact the goal, while the wall of the outer casing surrounds themselves and is struck back outward. In order to make a defined expansion possible of the front range of the rear core, the second variant of the invention is particularly favourable with small-caliber projectiles, which exhibit and heavily distort only a small cross section. By hollow or trichterförmige shape of the front end of the rear core is reached that this core expand itself in the desired way radially. With large-caliber projectiles the front face of the rear core can be less strongly hollow or trichterförmig or perhaps even flat arranged, whereby by the first variant of the invention use is then made.

Preferably the lateral mark is a extent-moderately running groove with the first variant of the invention. Also several discrete lateral marks can to be alternative around the extent of the outer casing around arranged or it be able several one behind the other arranged grooves to be present.

The double chamber projectile after the invention exhibits on the one hand a fast responding mode in the goal and on the other hand develops clearly defined projectiles a remainder body with large mass, in order to obtain a committee in the game body.

It is possible, the front core of the projectile from a lead free material, like zinc, tin or copper to replace. Thus it is prevented that the game body is contaminated by lead. The outer casing and the interior coat prevent a withdrawing of lead from the rear core by the education of a defined projectile remainder body.

In the following with reference to the designs remark examples of the invention are more near described.

Show:

Fig. 1 a profile of a double chamber projectile of relatively small caliber,
Fig. 2 a profile of the projectile remainder body of the projectile after Fig. 1,
Fig. 3 a cut by a projectile of middle caliber,
Fig. 4 the projectile remainder body of the projectile of Fig. 3,
Fig. 5 a cut of a projectile of large caliber,
Fig. 6 the projectile remainder body of the projectile of Fig. 5,
Fig. 7 a double chamber projectile without lateral mark and
Fig. 8 the projectile remainder body of the projectile of Fig. 7.

The double chamber projectile is suitable for hand-held weapons (rifles) and handguns (pistols, guns u.dgl.), is however in particular intended for hunt cans.

In accordance with Fig. 1 consists the outer casing 10 of a tubular cylindrical section 11, which is final at an end by a bottom wall 12 and exhibits at the other end a kegelstumpfförmige point 13, which is open in front. In the rear range of the projectile is the rear core 14, which consists of lead. This core 14 exhibits a kegelstumpfförmige hollow 15 at its front end. The kappenförmige interior coat 16 encloses the core 14 laterally. In addition the interior coat 16 covers the wall of the hollow 15 with its soil 17 directed forward. The soil 17 exhibits a central opening 18.

The interior coat 16 consists of a ductile, rapid material, whose strength is substantially smaller than that of the outer casing 11. The side panel of the interior coat 16 rests full-laminar against the inside of the outer casing and the core 14 rests for his part full-laminar the inside of the interior coat 16 and against the soil 12 of the outer casing 11.

Before the rear core 14 the front core 19 is arranged, which fills out the cross section of the outer casing 11 completely. The rear end of the core 19 rests within the range of the central opening 18 directly against the material of the core 14. The rear surface of the core 19 is in such a way arranged that it follows the outer contour of the bottom wall 17, so that the cores 14 and 19 fill out the volume of the outer casing 11 together with the interior coat 16 completely and cavity-free. Only at the front end of the point 13 is a cavity 20, which is not filled out by the material of the core 19.

At height of the rear end of the interior coat 16 the outer casing is 11 by a mark 21 in form of one continuous and with constant cross section rotating groove deformed. The mark 21 is so deep that it extends into the core 14 inside, so that the interior coat 16 receives a recessing 22, which is pressed into the core 14. The end of 23 of the interior coat 16 is in that place, in which the rear end of the mark 21 at the inside of the outer casing 11 forms a break line with the rear cylindrical part of the outer casing. The centre plane of the mark 21 is below the middle height of the core 14.

With the penetration of the projectile into a soft goal the outer casing expand itself 11, on the basis of the central opening in its point 13, radially and turns down to the tail. The rear core 14, which has a positive connection with the outer casing 11 by the mark 21 over the interior coat 16, deforms within the range of the trichterförmigen hollow 15, those in accordance with Fig. 2 one flatpresses and radially outward expand itself. The full surface contact between the exterior surface of the core remains 14 and the kappenförmigen interior coat 16 also within the range of the bottom wall 17. The trichterförmige hollow 15 surrounding boundary region of the core 14 forms therefore a deformation zone, which takes up a part of the projectile energy and holds on the other hand the expand core 14 by radial expansion. By the radial expansion a projectile remainder body, which is clearly circumscribed by the rear part of the outer casing 11 and the interior coat 16, forms front end of the core 14 and the interior coat 16. The deformation zone causes a deformation stop, which is independently of the range of fire effective, so that the rear core 14 cannot withdraw also during small range of fire from the outer casing. In addition the mark 21 represents a delimitation for the Aufpflzung of the outer casing 11. In each case therefore form and actuated connection between outer casing and interior coat remains and/or. an actuated connection is made, independently of the presence of the mark 21.

In place of the mark 21 also for example by the inside of the outer casing 11 which is away bulge can be intended, while the exterior of the outer casing is smooth. This requires however a increased manufacture expenditure for the projectile. Also different connecting kinds between the rear end of the interior coat 16 and the outer casing 11 are possible.

The remark examples of the Fig. 3 and 4 and/or. 5 and 6 differs only slightly from that the Fig. 1 and 2. Therefore the following description of these further remark examples is limited to the explanation of the differences to the first remark example.

The projectile of the Fig. middle caliber has 3 and 4, with which the cores 14 and 19 have a larger diameter. The conical hollow 15 is provided therefore flatter than with the first remark example and not with a central opening. Like Fig. , forms also here the front end of the rear core 14 a deformation zone shows 4, in which the material of the core 14 evades radially outward and presses against the outer casing 11, in order to hold the core 14 together with the interior coat 16 wedging in the outer casing.

The Fig. 5 and 6 shows a large-caliber projectile, with which the core 14 exhibits a better deformation readiness due to its larger cross section. The front face of the core 14 is trained here evenly and it runs right-angled as the longitudinal direction. The interior coat 16 exhibits accordingly an even bottom wall 17.

With in Fig. 7 represented projectile no mark 21 is present, as with the preceding remark examples. The hollow 15 of the

rear core 14 has the form a Kugelkalotte and the soil 17 of the interior coat 16 is adapted the hollow form, so that it einschmiegt itself full-laminar into the hollow. The rear wall of the front core 19 schmiegt itself from the outside to the soil 17 on.

Like Fig. , is outward inverted the outer casing 11 shows 8 with the impact the goal, while the rear range of the outer casing essentially maintains its form. By imprinting the rear end of the front core 19 into the hollow 15 the rear core 14 within its front range is radially expand, so that it presses and thus in this is actuated held 16 against the outer casing 11 in increased measure over the interior coat. If the front core penetrated 19 into the goal, therefore the rear core 14 cannot escape from the outer casing and the front core without taking along of the deformed outer casing not to follow.

With all remark examples it is important that the core 14 has a deformation zone. The deformation behavior of this zone depends on

- the execution of the outer casing 11,
- the projectile cross section of the rear core 14,
- the execution of the interior coat 16,
- the execution of the deformation zone.

These criteria must be co-ordinated during the projectile development.



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1. Double chamber projectile for hand and handguns, in particular hunt cans, with two cores arranged one behind the other in an outer casing and the rear core at its front and laterally surrounding kappenförmigen interior coat, thus characterized, that the outer casing (11) and the interior coat (16) are hooked with one another by at least a lateral mark (21).
2. Doppelkammer-Geschoss for hand and handguns, in particular hunt cans, with two cores arranged one behind the other in an outer casing and the rear core at its front and laterally surrounding kappenförmigen interior coat, thus characterized, that the rear core (14) at its front a hollow (15) and that a rear beginning of the front core as well as the soil (17) of the interior coat (16) exhibits fills out the hollow (15).
3. Double chamber projectile according to requirement 1, by the fact characterized that the lateral mark (21) is a extent-moderately rotating groove.
4. Double chamber projectile according to requirement 1 or 3, by the fact characterized that the mark (21) is arranged at height of the rear end of the interior coat (16).
5. Double chamber projectile after one of the requirements 1 to 4, by the fact characterized that the soil (17) of the interior coat (16) exhibits a central opening (18).
6. Double chamber projectile after one of the requirements 1 to 5, by the fact characterized that the front core (19) essentially consists of non-lead containing material.